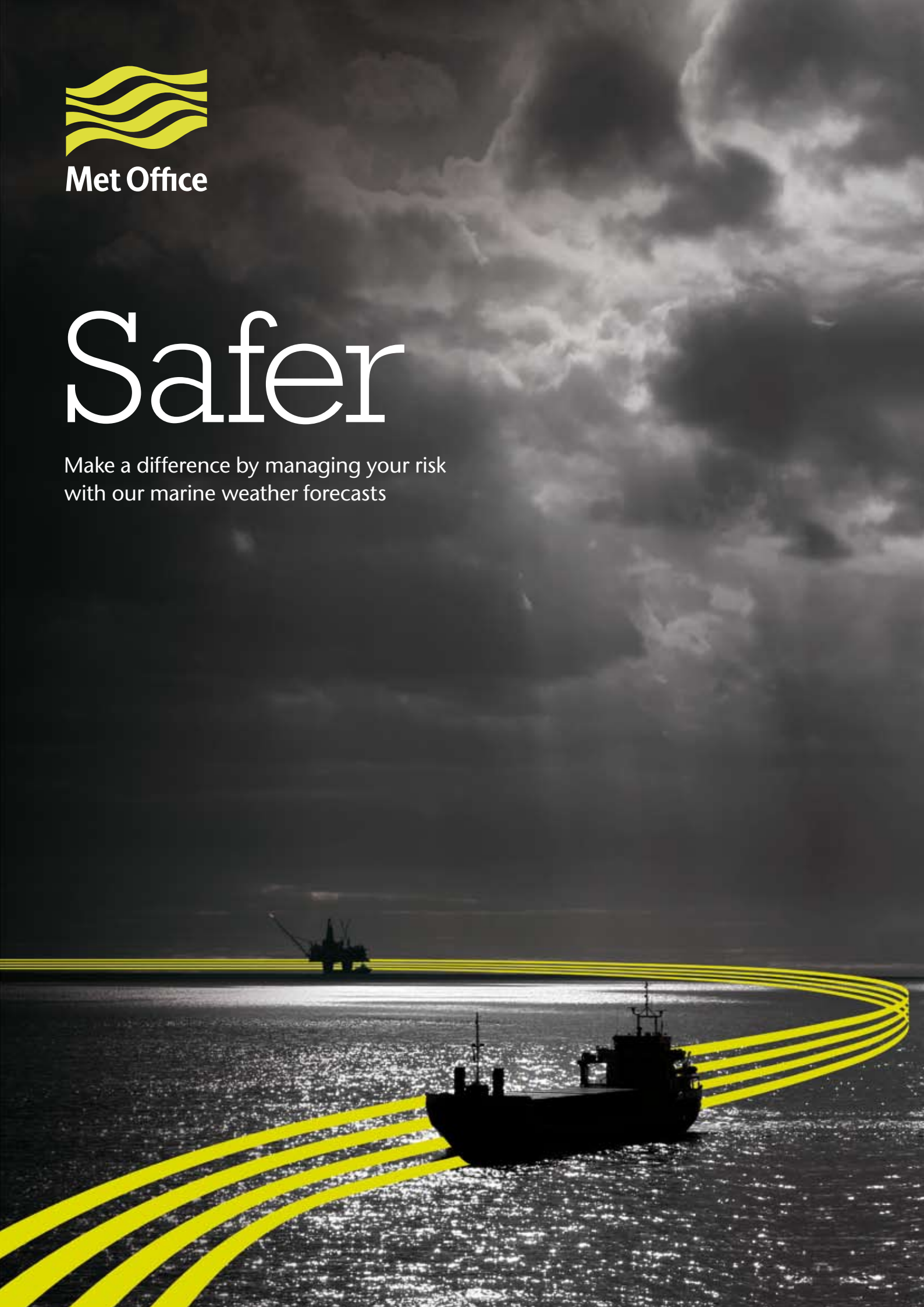
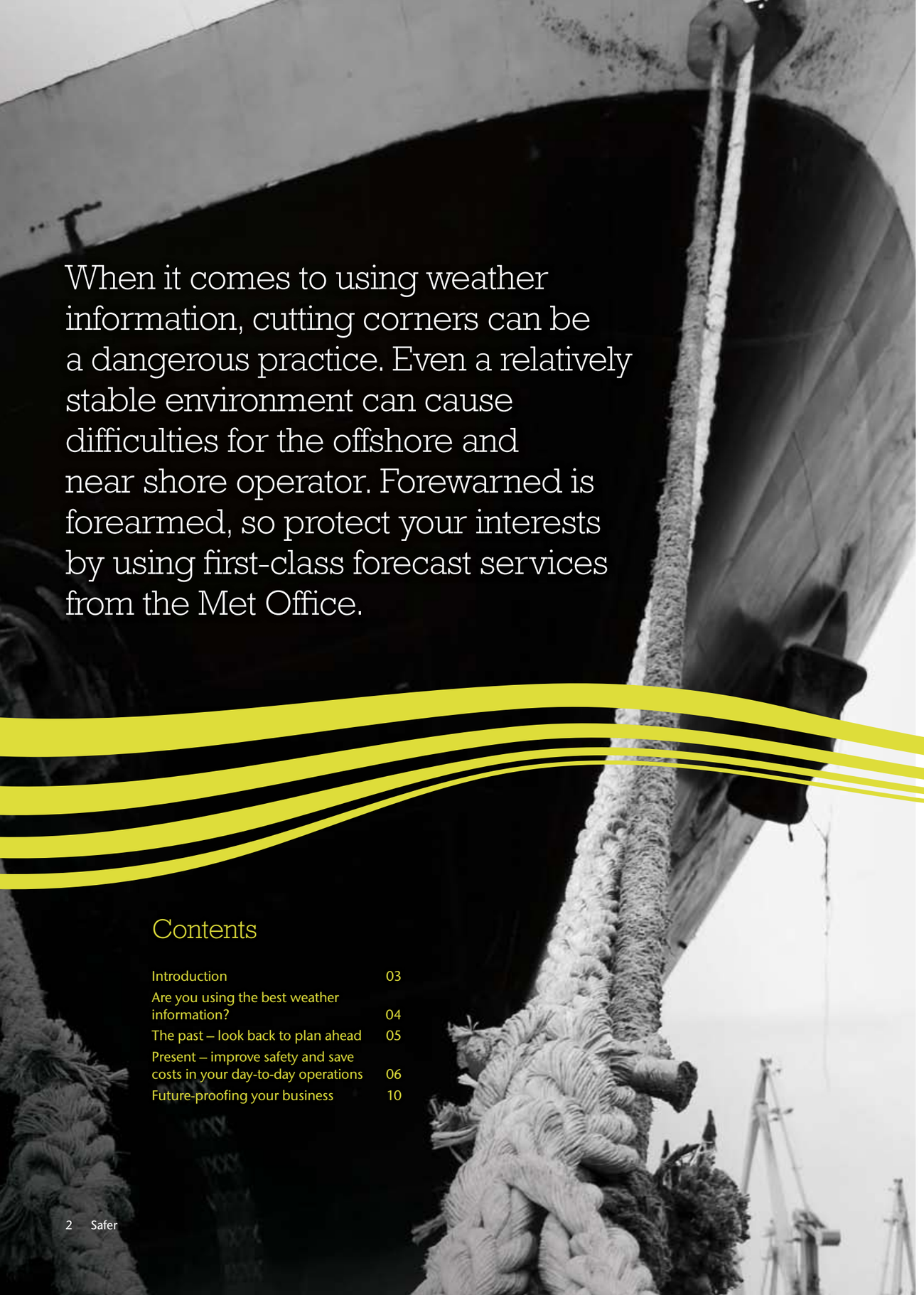
Met Office

Safer

Make a difference by managing your risk with our marine weather forecasts





When it comes to using weather information, cutting corners can be a dangerous practice. Even a relatively stable environment can cause difficulties for the offshore and near shore operator. Forewarned is forearmed, so protect your interests by using first-class forecast services from the Met Office.

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For over 150 years the Met Office has worked to establish an internationally renowned reputation for scientific and technical distinction. Dual operation centres at our headquarters in Exeter and at our marine centre of excellence in Aberdeen guarantee you an accurate and reliable supplier of a wide range of weather and metocean information.

Whatever marine industry or environment you work in, whether it's offshore oil and gas, shipping, ports or renewable energy, we can help you reduce your exposure to uncertainty and give you the confidence to make the right decisions.

Met Office services enable you to:

- minimise costs and reduce risk in relation to weather
- achieve the highest levels of safety through receipt of timely and accurate advice
- maximise efficiency and improve resource allocation through accurate identification of weather opportunities

Rest assured our services offer you the best quality and value because:

- our research and development programmes ensure cutting edge science provides you with the best possible information and advice
- we use our world-leading operational numerical models of the atmosphere and ocean
- of our specialist marine team of fully trained forecasters, experienced in the needs of the marine community
- we carry out forecast verification to monitor the performance of forecasts
- the Met Office holds ISO9001 accreditation

Did you know?

The Met Office, the UK's National Meteorological Service, works 24 hours a day, 7 days a week, 365 days a year to mitigate the effects of weather and climate, protecting people, property and national infrastructure.

END-TO-END WEATHER SOLUTIONS

From the seabed to the sea surface and into the atmosphere

We provide solutions through critical phases of marine operations, from project planning using historical data, to assisting with day-to-day operational support, to future-proofing in relation to climate change.

Past – look back to plan ahead

Our large and unrivalled archive of weather data can be used for:

- risk and project feasibility assessment
- investment assessment in relation to the marine environment
- settling a dispute or maritime event in response to legal or insurance issues

Present – improve safety and reduce costs in your daily operations

Our suite of products can provide you with:

- detailed wind, wave and sea condition forecasts
- site specific, tow and route forecasts
- telephone access to specialist marine forecasters on a 24/7 basis
- provision of on-site forecasters during extremely weather sensitive operations
- full global coverage

Future – access to world-class research and climate change expertise

Our consultants can offer you expert advice on:

- seasonal forecasts for predicting future downtime
- combating climate change through informed asset management
- minimising future risk by using the latest guidance on the impact of storms and extreme weather events

CASE STUDY 1

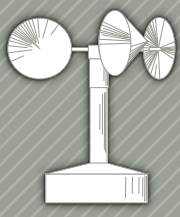
Impacts of the weather on sensitive operations in the North Sea

THE PROBLEM

Narrow country roads in Caithness, Scotland, meant that Subsea7 had to transport a large tow head by sea from Nigg, Cromarty Firth, to Sinclair's Bay. The tow head was to be attached to pipe bundles (up to 7 km in length) fabricated at Sinclair's Bay and then towed out to the Jura oil production field. Appropriate weather windows needed to be determined to:

- transport the tow head via sea
- construct temporary roadway on the beach to transfer tow head
- land the barge and tow head on the beach to attach the pipe bundle
- launch and floatation of the bundle
- tow the bundles out to the Jura field

CRITICAL FACTORS



Transit from Nigg to Sinclair's Bay, and back, required a 48-hour weather window that ensured:

- force 5 wind or less, with associated seas during landing operations
- the significant wave height did not exceed 0.5m for a period of 12-16 hours
- that the tide on approach and departure was on high water and roll-off was on low water

When the bundle is launched and 'buoyant', the bundle is towed offshore for installation. The length of bundle makes it highly sensitive to wave height and period, as both place stresses on the bundle.

CASE STUDY 1

What the Met Office did

THE SOLUTION

PAST – planning using hindcast data

Hindcast analysis was carried out to help the project team identify the most likely times when there would be a weather window for the operation. Once the opportunity was identified, the project team was put in place. Our involvement in team planning meetings enabled a better appreciation of critical limits, and ensured timely response and relevant use of planning data.

PRESENT – before and during the project

We provided probability forecasts illustrating the outlook for wind and wave conditions out to 14 days ahead. Using these in tandem with the 5 day detailed forecast conditions provided the detail required to avoid the high costs of maintaining crews on site, waiting for weather, but ensured sufficient notice to make sure crews arrived on time.

Tow/move forecasts were used to ensure the safe transit of the barge and towhead from Nigg, Cromarty Firth to Sinclair's Bay. As the weather window approached, precise advice was critical so a forecaster was deployed to be on hand to brief the operational teams. This enabled all opportunities to be taken and for contingency plans to be made.

Arnbjørn Joensen, Construction Manager for Subsea7 commented, "The barge landing and towhead transport went well. Martin's [the Met office forecaster onsite] forecasts were, if not spot on, close to what we actually experienced, and his input to the project was crucial for the successful operation. The Jura Project is very pleased with services received from the Met Office. Please pass on our appreciation to all involved."

FUTURE – what next?

"We will be looking for something similar for the next bundle launch and I would be pleased if we could meet with the Met Office again soon to discuss the past and plan for the next stage." Arnbjørn Joensen. Subsea7.

Are you using the best weather information?

Not all forecasts are of equal quality and many marine and offshore users still rely on sources of weather data that may not have gone through rigorous quality control. This could mean safety levels and cost efficiencies are not being maximised, particularly at times when anticipated weather conditions are at the cusp of operating thresholds.

ENSURING ACCURACY

Investment in data and modelling to ensure accuracy

Accurately predicting marine weather and sea-state demands the best data available. Our investment in our supercomputer and research and development means that we have the most precise information to meet the needs of a wide range of users in the marine and offshore industries.

Underlining the requirement for precision and accuracy is the recent trend for the exploration of deeper waters and more hostile marine environments, as well as exploitation of complex near shore environments.

The Met Office gathers marine data from a wide variety of sources, including ship observations, automatic marine weather stations and satellites. Satellites provide information about the atmosphere and wave height. These data sets are assimilated into Met Office numerical models that predict the development of the atmosphere, the output of which is used to derive further output from wave and current models for marine forecasts.

QUALITY CONTROL

Highly trained forecasters intervene for the ultimate in quality forecasting

Our trained forecasters intervene on the model output, using latest weather information as well as their knowledge and expertise to add that vital quality control to the forecast service.

This ensures that our forecasts are of the quality that is essential for safety and efficiency in longer term planning, day-to-day operations and specific weather-sensitive projects.

We continually advance our science and technology to offer you an end-to-end enhanced range of forecast services to help you deal with the challenges of operating in a marine environment safely and efficiently.

The past – look back to plan ahead

When planning your marine asset, be it in its design for optimum efficiency and safety, or the delivery of project within time or budget constraints, you need a complete and accurate picture of the risks presented by the marine environment.

ARCHIVE DATA

Use our wealth of archive and data to improve project planning

The Met Office expert metocean team will work with you to select the most suitable solution – sourcing quality controlled in-house archives of measured and observational data, as well as data from atmospheric, wave and sea models. This data can be used to build a picture of weather conditions to help identify weather windows, expected levels of downtime and feasibility of certain operating parameters.

Hindcast data from Met Office forecast models can be used to provide 'virtual data' of the future. The use of 'virtual data' is invaluable in the viability of operating in new areas of exploration such as the Atlantic margin, as well as monitoring contractual performance or downtime in the North Sea.

Through our specialist knowledge and understanding of the marine and offshore community we can help you tailor information so you get the facts required to meet your specific needs and budget. Our involvement ranges from fully integrated consultancy support to simply supplying specialised metocean data.

LEGAL AND RISK MITIGATION

Weather analysis and expert opinion

The Met Office provides authoritative and impartial guidance in the case of contractual disputes or maritime events that call for legal or insurance involvement anywhere in the world. With expertise in cases including ship loss or collision, heavy weather damage, personal injury, safe port issues and vessel performance, our experts can answer your weather-related issues using retrospective global marine weather analysis. Guidance is provided to meet your particular requirement. The services range from written reports to the provision of expert testimony at court or arbitration hearings.

The Met Office has an impressive track record of involvement with high-profile cases.

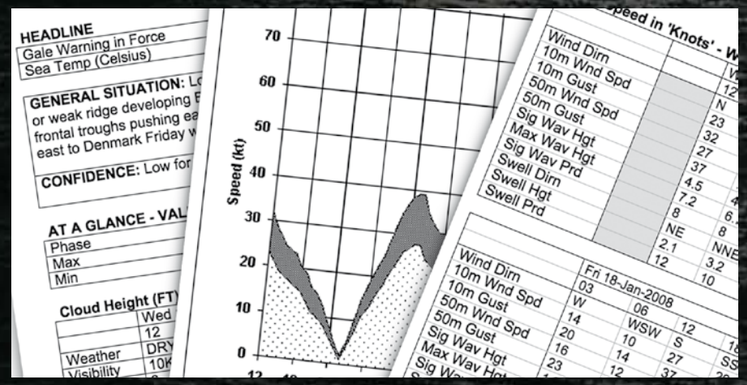
"A good friend of mine called me to ask who I would recommend to provide a weather assessment on a voyage to settle a dispute. I put him straight on to the Met Office who had previously done a very good and thorough job for me. I found them to be better and more accurate than other weather suppliers for such a task."

Nic Paines, Newman Giles and Co. Ltd,
Consulting Marine Engineers
and Ship Surveyors.

Present – improve safety and save costs in your day-to-day operations

Marine forecasts are integral to operational planning. Resources can be efficiently and safely deployed by assessing the impact of the prevailing and forecast weather and sea-state conditions on operations. This could be to decide whether sea conditions are suitable for berthing vessels in port, moving jack-up rigs or floating production, storage and offloading vessel operations; or that winds are suitable for crane work or helicopter operations on an offshore platform.

Our forecast products are designed to assist with day-to-day decision making to help you minimise project costs and ensure maximum return through intelligent investment.



Tab and graph forecast example

TAB AND GRAPH FIVE DAY FORECAST

All weather and warning information specific to your site for five days ahead

The tab and graph forecast is issued twice a day and is specific to your location. It presents a five-day outlook of all the key marine forecast information such as wind speed and direction, wave height and swell, wave period, weather, visibility and cloud. Forecasters intervene to ensure quality and to provide valuable observations of the developing weather conditions.

ADVICE REQUIRED ON FORECAST INTERPRETATION?

Call us 24/7 as part of your forecast package

If you have any doubt about a forecast, or the weather is close to your operational limits, then our team of marine forecasters is just a phone call away. As part of your Met Office forecast service our forecasters are available 27/4 to discuss your requirements and help you.

"Many thanks for your excellent forecasts during our short Antarctic season. Your service provided accurate forecasts for our region that were very useful in planning our activities. They were possibly the best localised forecasts I have seen."

Captain Frank Allica, Spirit of Adventure, Saga Adventure Cruising, commenting on his Met Office route forecast while cruising around Antarctica and on to Chile.

OFFSHORE DEPLOYMENT

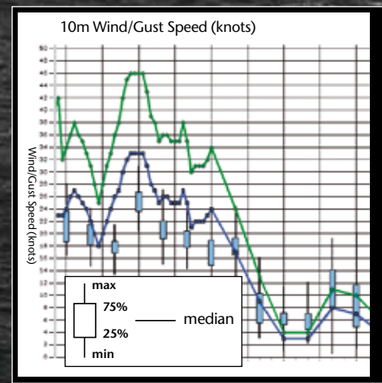
Have an expert on hand for improved decision making in critical weather

When you are operating to demanding weather critical limits or in extremely sensitive weather conditions we offer on-site forecaster deployment. With close involvement and awareness of operational requirement, the forecaster is able to make on-site judgement enabling you to make informed decisions in marginal conditions, ensuring rapid response to weather opportunity and related safety and cost savings.

RIG TOW

Move your assets safely

Our detailed marine weather information is ideally suited for planned movements of rigs or vessels. We are able to provide forecasts along a route as you move. For example, minimising, or even eliminating downtime when towing a vessel across the Atlantic saves both time and money and helps ensure that cargo arrives safely and on time. Our forecasts are customised to be specific to your operation – both in terms of location and timing – enabling early identification of potential problems.



The probability forecast displays the range of likely weather outcomes for a given time. The heavy black line denotes the median, the 'box' shows the range of most likely outcomes, and the end of the 'whiskers' the extent of uncertainty.

When used regularly alongside a routine forecast service, this service provides a powerful tool for assessing the confidence that should be placed upon, as well as the probability, of a particular weather outcome.

Box and whiskers probability forecast example

PROBABILITY 14 DAY OUTLOOK

A powerful decision making aid for the medium term

This forecast is ideal for medium-term planning as it provides an outlook of conditions for up to 14 days ahead. By using proven scientific methodology, probabilistic forecasts provide a quantitative assessment of uncertainty, enabling you to assess and estimate the risk of events occurring. When used in conjunction with the five day tab and graph outlook the probability forecast can add considerable value to the risk assessment process, particularly when making critical operating decisions in the medium term.

"Thanks for these forecasts! As a result of them accurately predicting a suitable weather window, we were able to mobilise personnel and equipment to complete a particularly weather sensitive offshore operation earlier this week."

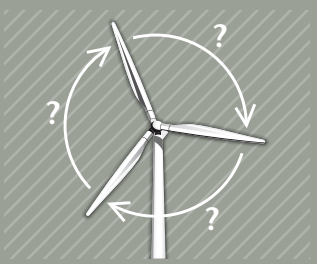
Andrew Macnamara, Pelamis Wave, commenting on his probability forecasts.

CASE STUDY 2

Impacts on the energy industry

THE PROBLEM

Weather and sea state have a huge impact on the success of renewable energy projects.



VITAL FACTORS

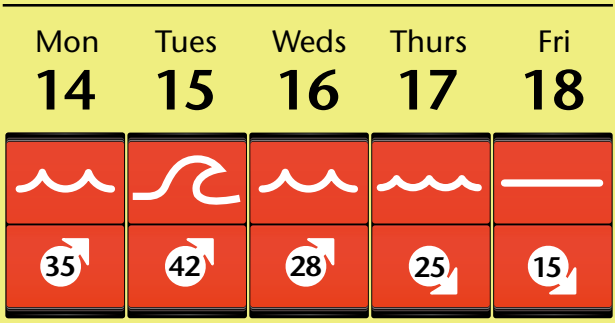
1. Assessment of available wind resource when contemplating a new windfarm project

2. Accurate daily information on wind and sea state for safe and cost efficient installation and maintenance

3. Longer term climate advice to ensure longevity of offshore wind turbines in harsh marine environment

CASE STUDY 2

What the Met Office did



SOLUTION

Our expert advice reduces risks in the planning, construction and operational phases of projects.

PAST – ensuring accurate resource and design

In the planning phase of offshore windfarms we provide hindcast data on site-specific locations to determine their suitability. Our estimations of the wind resource make it possible to assess economic viability. We provide metocean information to engineering design in order to minimise downtime due to damage caused by extreme weather.

PRESENT – construction and operation

During installation, and operation, our reliable daily forecasts reduce the risk of the marine environment. This stage is highly weather-sensitive so up-to-date information is crucial to minimise downtime and enable crews to access turbines to monitor and maintain energy production.

We work with a number of offshore windfarms, providing:

- detailed five-day site-specific forecasts on wind and sea state for planning daily work
- daily telephone briefings by forecasters
- advance warnings issued for lightning and excessively high wind speeds
- training workshops on forecast interpretation to ensure maximum benefit

FUTURE – longer term

Renewables projects typically last for 25 years but, as the climate continues to change, it is vital to assess how the resource may change in the longer term. Our consultancy team provide climate change advice to ensure windfarms can withstand the changing environment.

Present – weather information as and when you need it

Did you know?
At the Met Office there is continuous research and development to maintain quality and improve the accuracy of our forecasts.

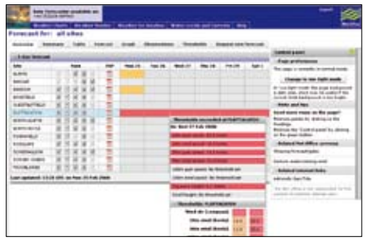
SAFESEE – REAL-TIME FORECAST

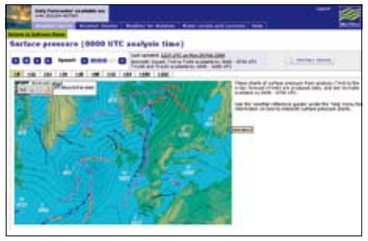
Your one stop, web shop for weather information

Safesee is a new web-based system developed by the Met Office, to deliver up-to-the-minute weather information. Hourly updates of conditions, exclusively available via Safesee, ensure you have up to date information available to make the best decisions in weather sensitive situations. The addition of observations, where appropriate, provides extra input for even greater accuracy.

Designed with you in mind, Safesee provides fast and easy access to weather information. Its enhanced visualisation allows you to interact with the information enabling you to set your own weather thresholds. Thresholds are highlighted in an 'at a glance' traffic light table, on the home page to alert you of any weather problems as soon as you log on.

From a nowcast, to your site-specific forecasts to general weather information, such as satellite imagery, aviation TAFs and METARs, lightning and rainfall; Safesee is the ideal tool for up-to-date weather information accessible 24/7.





Did you know?
We run weather workshops to make sure our customers get the most out of our forecasts, so they can make well-informed operational decisions.

WEATHER TRAINING

Improve your weather interpretation skills with a Met Office accredited course

Get the most out of your weather information and enrol yourself on a Met Office training course. We offer standard meteorological courses or can tailor them for your specific requirements.

DELIVERING FORECASTS

Flexible choice in forecast delivery

We use the latest in computer and communications technology to ensure timely delivery of our forecasts. Email, fax, web – the choice is yours.

Did you know?
Round the clock telephone access to a forecaster is included as part of our service providing you on hand advice whenever you need it.

Did you know?
Our forecasts are forecaster intervened and adapted manually, so that customers get more accurate information, enabling them to make better decisions, reducing their exposure to risk.

"Thanks again for an interesting and informative training session."

Dr T.H. Moller, Managing Director of The International Tanker Owners Pollution Federation Limited.

Future-proofing your business

CONSULTANCY

Consultancy adds the expert touch to combat climate change and aid planning strategy

Met Office consultants provide expert analysis that can help you make informed decisions about weather effects on your project and increase resilience to future climate change.

Whether you...

- are planning your next major offshore exploration project
- require seasonal forecasts to help predict future downtimes
- require early warnings of extreme events, storms and high winds
- require advice on the best site for an offshore asset
- are representing a client in a maritime dispute
- require long-term strategic advice on climate change and sea-level rise in relation to assets

...our consultancy team will work with you to build a complete and accurate picture of the risks and potential mitigation presented by the marine environment, in relation to weather and climate.

We help energy companies adapt to using renewable sources of power including the sea, providing generation through tidal and wave action. Using wind energy to generate electricity is a key part of meeting government targets to tackle climate change. We can help determine whether there is enough resource (wind and sea current) for offshore wind farms and tidal current machines, as well as informing their design. We can also model the average sea level in a changing climate to help predict the intensity and frequency of storm surges. This modelling can be done for your project enabling you to improve resilience and materials planning for your site.

Did you know?

We provide end-to-end weather services and solutions from day-to-day weather information to hindcast analysis, to forecasting weeks to years in advance.

THE NATIONAL CENTRE FOR OCEAN FORECASTING

World-class research partnership to ensure advances in ocean science

As part of our research and development programme the Met Office is a strategic partner of the National Centre of Ocean Forecasting (NCOF).

Building on existing collaborations, we bring together the operational expertise of the Met Office with the world-class research carried out by a number of the UK's leading oceanographic research centres, including the Proudman Oceanographic Laboratory, the Plymouth Marine Laboratory, Reading University's Environmental Systems Science Centre and the National Oceanography Centre, Southampton.

World-class research and development by NCOF includes:

- Enhancement of wave forecasting models
- Currents, sea surface and sea temperature information from:
  - Regional shelf-seas models
  - Forecasting Ocean Assimilation Model (FOAM) – a global and basin-scale deep-ocean analysis and forecasting system
- Ecosystem modelling, for global oceans and the shelf-seas around the UK

For more information please contact the marine team at marine@metoffice.gov.uk

Did you know?

Our products and services help companies make operational and planning decisions that improve safety, reduce costs and downtime.

Did you know?

Our high resolution shelf-sea model forecasts sea-bed temperatures in the North Sea which helps gas engineers make the most cost-effective use of their sub-sea network of gas pipelines.

"I found the forecast from the Met Office to be extremely accurate and I strongly recommend their services for all future company requirements."

Glen Lavender, Master. Adams Surveyor.

CONTACT US TODAY

For more information on our marine forecasting capabilities and how they can help you, call us on 0870 900 0100 or email marine@metoffice.gov.uk quoting 'marine brochure' as a reference.

Met Office
Davidson House
Campus 1
Aberdeen Science
and Technology Park
Balgownie Road
Bridge of Don
Aberdeen
AB22 8GT

Met Office
FitzRoy Road, Exeter
Devon, EX1 3PB
United Kingdom

Tel: 0870 900 0100
Fax: 0870 900 5050
marine@metoffice.gov.uk
www.metoffice.gov.uk

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